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Title: Formality_Of_Operations

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Los Alamos
NATIONAL LABORATORY

Enhancing formality of operations at LANL

[DATE], 2021

[Presenter name, title]

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Agenda

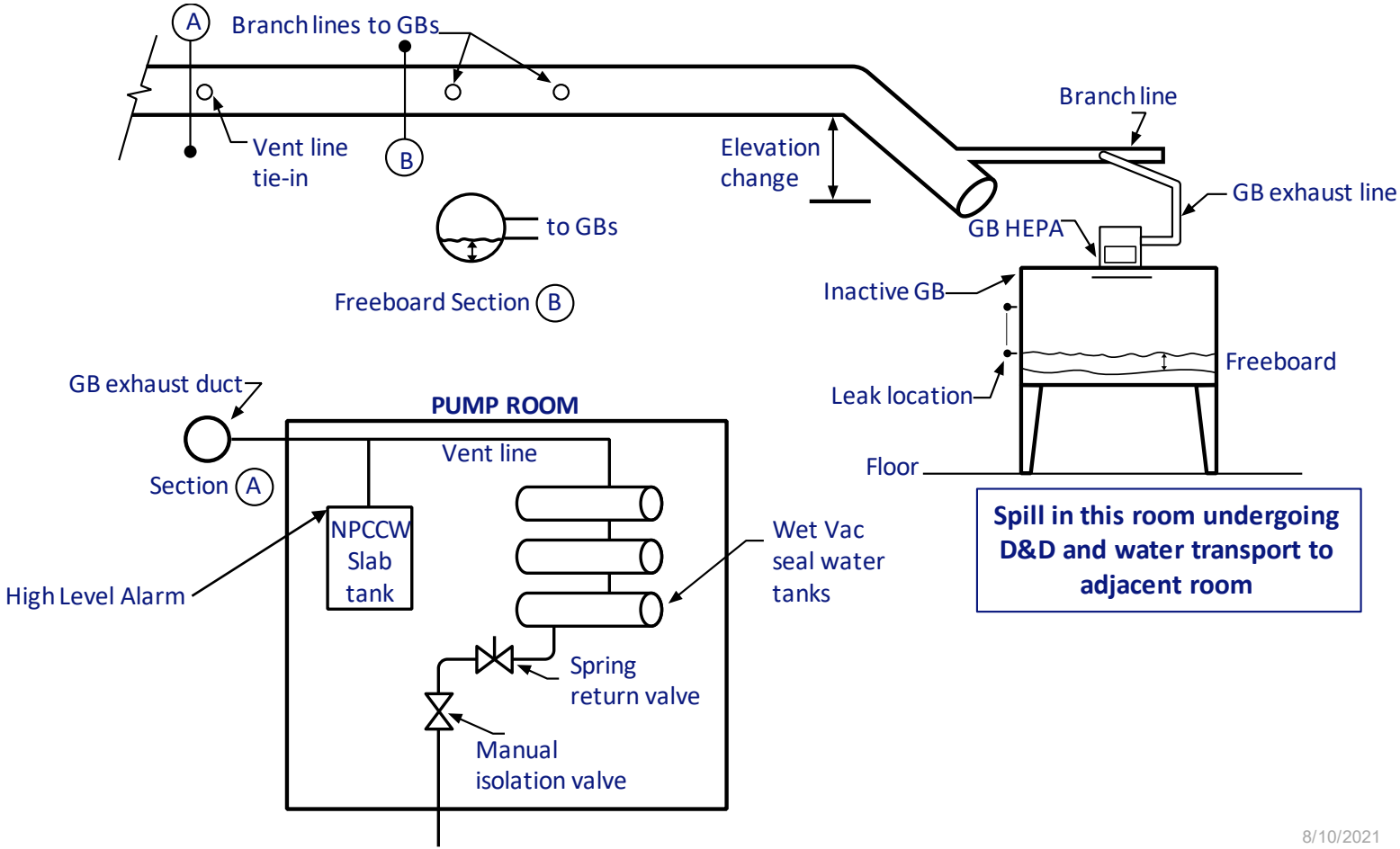
1. Introductory comments – Ted Wyka, Thom Mason (5 mins)
2. Summary of 7/19 PF-4 overflow event – David Dooley (15 mins)
3. Discussion on institutional efforts to improve formality of operations – Thom Mason (25 mins)
4. Q&A over approach and related issues (10 mins)
5. Close/actions – all (5 mins)

PF-4 Overflow Event

Event

- On July 19, approximately 280 gallons of water entered the Zone 1 ventilation in PF-4 and subsequently into multiple rooms and into the PF-4 basement as the result of an incorrectly performed operation to fill a seal tank for the Wet Vac System:
  - Two evolutions scheduled to occur in same high contamination and airborne radioactivity area (room): Maintenance on Negative Pressure Circulating Chilled Water Pump; Operations to fill the Wet Vac Seal Tank
  - At the request of the operations technician, the maintenance craft worker performed the filling operation
  - Maintenance craft worker was not familiar or trained on the procedure, executed the work based on verbal description by the operations technician; didn't use or know about reference procedure for the tank filling task
  - Overflow of the Wet Vac Seal Tank resulted due to improper valve alignment and apparent leaking spring return valve

System layout



PF-4 overflow event cont'd.

Event

- Water overfilled and entered into Zone 1 Ventilation System via vent from Wet Vac System
  - Water flowed to a low point, a glovebox (low point) that was undergoing D&D and contained no SNM ;
  - Water leaked out of the D&D glovebox into adjacent rooms and into PF-4 Basement
- Alarms – control room operators did not respond to Negative Pressure Circulating Chilled Water high level alarms due to being alerted earlier that such an alarm might result from the maintenance on the system when the pump was turned off.

PF-4 overflow event cont'd.

Direct and contributing causes

- Not following procedure
- No diversion of water to a drain
- Sight level indicators are difficult to read
- Frequent filling of Wet Vac is due to leakage of pump packing
  - Complete installation of magnetic drive pump
- Culture – 'Get the job done' attitude by personnel who may not appreciate how tasks could impact safety and operations
  - Craft worker accepted the task for a system he wasn't familiar
  - Operations technician thought it ok to hand off the task

PF-4 overflow event cont'd.

Currently impacted operations

- Negative Pressure Circulating Chilled Water
  - Metal purification furnaces
- Wet Vac
  - Aqueous processing
- NDA Activities

Currently operational

- Positive Pressure Circulating Chilled Water – 3 week delay has impacted:
  - Material Movements
  - Foundry operations
  - Machining
  - Welding
  - Dimensional Inspection

PF-4 overflow event cont'd.

Current controls on the system

- Positive Pressure Circulating Chilled Water
  - Total of four valves locked: two supply and two return
  - Isolating fill and cooling to NPCCW and Wet Vac
- Negative Pressure Circulating Chilled Water
  - Manual fill valve confirmed closed providing double valve isolation
- Wet Vac
  - Manual fill valve confirmed closed providing double valve isolation

PF-4 overflow event cont'd.

Status of cleanup

- Inactive Room – Decontaminated and Released
- Pyrochemical Processing Room – Decontaminated and Released
- NMCA Room – Decontaminated and Released, focused area decon continues
- Waste Management Room – Initial decon successful, currently housing equipment from adjacent room
- Non-Destructive Assay Room – Decon complete, floor has been repainted, reinstallation of equipment occurring

PF-4 overflow event cont'd.

Path forward

- Implement actions listed in June 10th memo ALDWP:21-0846
  - Continue with planned Independent External Review by HII

- Determine long term engineered controls to eliminate Zone 1 venting

Institutional leadership improvements in conduct of operations

- **As we address the event in PF-4 on 7/19, we are also completing a Lab-wide review of our operational performance**
- **We have made solid progress to date:**
  - Improving actions, behaviors and practices of high-hazard operations to enable us to safely deliver the mission has been, and will continue to be, a major focus area
  - Executing a significant increase in mission scope with fewer operational upsets (ORPS data)
  - The PF-4 overflow paused the mission and represents a serious conduct of operations failure
- **The 7/19 event provides a well-timed opportunity to reinforce and double-down on our efforts in strengthening formality of operations**
  - Our aim is to build **resilience** into the system so that when events happen the controls are in place to mitigate the potential for human error, thereby protecting against employee hazards and interruption/delay/failure of mission scope
  - Weakness in one area limits our effectiveness across the entire Laboratory
- **Three main safety culture focus areas underpin this effort:**
  1. Leadership
  2. Employee engagement
  3. Organizational learning

1. Leadership: Lab Director leads, prioritizes improvements to operational performance

- **Effective communication, setting of expectations at all levels of leadership**
  - Senior leadership discussion in August
  - All-manager meeting planned for September
    - The all-manager meeting has been an effective forum for covering recent events, setting expectations and framework around how we respond to such events, and for determining how to best communicate with employees
  - Success using this approach evident in response to COVID challenges, Low Oxygen alarms, high-energy events
  - Fosters trust, ownership, responsibility and transparency

- **Our Lab Agenda sets out our commitment and vision to change the culture around *how* we do our work**

- **Chief Operating Officers lead implementation of improvements to systems, methods, governing policies in their respective organizations**

2. Employee Engagement: Involves both top-down, bottom-up

- **All managers are expected to engage with employees on areas for improvement**
  - Expectation is that managers spend significant time in the field
  - LOSA helps line managers build communication skills for use in the field that encourage employees to fully understand hazards involved in their work
  - Promote SCoR principles
- **Cultural Alliance drives enhancements to existing Con Ops program**
  - Consists of ALDs, Field Office and other experts
- **Employee-led IWESST teams provide input from ground up**
  - Employee behaviors and ownership are essential
  - All-employee meeting scheduled in October
- **Importance of Craft workforce/maintenance function**
  - Deputy Director for Ops Kelly Beierschmitt directly engages craft stewards and safety representatives
  - Follow example set during COVID
  - Set expectations and listen to/understand needs specific to the craft workforce

3. Organizational learning: It never stops

- **Identification and sharing lessons learned associated with all events, including PF-4 overflow**
  - Institutionalized approach: Response to an individual event, application of lessons broadly across Lab
  - OPEX = central website for abnormal events, causes, improvements
  - Internal communications push to propagate lessons learned and raise awareness

- **Reachback to parent organizations**
  - Communities of Practice, Continuous Commissioning, senior supervisory watch, HII review of TA55 Ops
  - We know what good looks like: Will continue to benchmark, seek improvement and pursue operational excellence

- **LOSA training will resume in November**
  - COVID has impacted this critical tool for mentoring and coaching the right behaviors and learning environment

- **Measure, track progress**
  - We will tack our progress, examining and understanding causes and severity of operational deviations at both nuclear and non-nuclear facilities, and will measure the resilience of the controls in place
  - Defense in depth approach to mitigating hazards – both engineering and administrative controls

Questions & Backup

Disciplined operations and CONOPS improvements underway and planned for 2021

Aug	Sept	Oct	Nov
A Director-led meeting with all managers: 1. share lessons-learned from recent events 2. reinforce leadership presence on the floor 3. utilize SCOR (everyone responsible for their own safety) principles to assess work evolutions 4. Direct a flow down of these safety discussions to every member of the workforce	Explore bringing in via subcontracts, operations experts what will be present on the floor mentoring workers and giving feedback to managers	Complete Causal Analysis for PF-4 spill	Restart the Laboratory Operations Supervisor Academy, an in person class with interactive coaching that was curtailed due to COVID restrictions Triad has reserved 50% of available seats in the first session when LOSA courses resume in November
The Director will also engage the *Culture Alliance* to identify additional actions that can be taken immediately to improve disciplined operations and CONOPS 1. Leadership - Reset expectations re: manager engagement in work planning, pre-job briefs, work execution 2. Employee Engagement - leverage VPP, IWESST, HPI, and BBS 3. Learning Organization - Safety shares for operational activities and use OPEX and LL	Free up RLMs for time in the field On a go-forward basis the Laboratory is considering designating one-day per week as a "No meeting day" with, the expectation set that all managers will utilize that day to be present on the floor overseeing work and asking directed questions of the staff performing that work	Pause periods, Senior Supervisory Watch (SSW) program, and the Coaching Tour program	Effectiveness Evaluation
The Deputy Director for Operations will engage the COOs to gain their thoughts and perspectives	DOE Org Culture Advisor (AU) assessment of LANL, to identify cultural barriers that lead to failure to conduct work as expected	Leverage learnings we already have from LOSA	
June TA-55 CONOPS Independent Assessment – HII – Corporate assistance	ALDWP – continue Abnormal Events Seminars where events are used to challenge managers and workers to jointly discuss the lessons learned - feedback on issues to address via issues management and/or WESST	Institutional training review and improvement	
Work teams to review their work documents with management to determine if the scope, hazards, and controls are adequately covered – focus is to ensure common understanding of how the work is to be performed (as opposed to procedure adequacy)	Evaluate ongoing training improvements (current and new employee) to ensure CONOPS adequately considered		
Plan for cross-team assessments on CONOPS in TA-55, focusing on weak areas in each division	Validate means for review of issues/lessons/worker feedback via Management Review Board/WESST/Issues Management		

There are many existing Institutional culture improvement programs and efforts

Parent Co.	Culture Alliance and other Efforts	VPP	IWESST	EMS	Safety/ Security Matters Communications	HPI	BBS	ISM	SCWE	IQPA
LOSA – SCoR 8 Guiding Principles	Leverage combined strength of multiple orgs to find solutions	Largest site in complex with STAR certification	WESST FEST	ISO 14001 certification	Early career worker messages. Visual learning aides.	5 Basic Principles 360 walkaround Veh/Ped Safety	Long Term Improvement	5 core functions • Define scope • Analyze hazards • Develop and implement controls • Perform work • Feedback and improvement	Safety Metrics	CAS
Video series on graduates and how they apply 8 principles in their everyday work life	• Leadership - Field Presence • Worker Engagement • Learning Org Questioning Attitude Active Bystander	Executive Steering Committee VPP Self-Assessment	WESST STAR Awards Quarterly meetings at Lab-wide level Monthly to more frequent meetings at Div, Group, Team levels	Environmental action plans Pollution prevention Site Sustainability Plan Energy conservation	Safety/Security comic each month LANL Radio safety/security messaging	Learning Teams • Build Trust • Move From React to Prevent Micro-experiments ROC drills Focus Groups	Continuous Recognition and Reinforcement of Safe Behaviors	Operational Performance • Benchmarking • Assessments • Evaluations • Surveillances	Safety Objectives	Occurrence Reporting Issues Management
Reach-back capabilities	Employee Recognition $ • LAAP • SPOT • Distinguished Performance • Service Anniversaries	Safety & Security Improvement Plans (SSIP)	Student IWESST	Reduce waste LEED green building certification GreenBuy Gold for sustainable acquisitions	2 minute videos: • Box cutter • Heater • Veh/Ped safety • Pause Work • Slips/trips/falls	Breaker Maintenance-work control across orgs video at DIR all-employee	ID and Eliminate Org Weakness	Incident Reporting/Fact Finding	SCWE Common Causes • O2 monitor failure	Assessments Program
Communities of Practice	Safety Concern Reporting • Hotline • FSR • How's my Driving • Employee Concerns Program • Differing Professional Opinions	Worksite Analysis Hazard Prevention and Control Health and Safety Training	Safety/Security/Culture Lab-wide Speakers	DOE Smart Lab Accelerator Program Patricia E. Gallagher Environmental Awards	Bicycle Safety Committee Motorcycle Safety Committee	HPI Training for Managers, Workers, and Practitioners HPI Professionals in Various Work Areas (craft/R&D)		Safety Policies and Procedures		Management Observation and Verification (MOV) Haze'n Days – MOV competition
	Ombuds Mental Health Wellness Programs Injury/Illness Goals	Annual DOE VPPA Conference	Nested Safety Meetings		8 LOSA Principles videos 667/2400	OPEX • Learning team results • Lessons learned • Best practices		Quick Start Guides Site Clean-Up		IMRB/MRBs

Achieving organizational culture change at LANL

Leadership

- Develop and communicate compelling strategic vision
- Integrate programs and support operations
- Make timely decisions and communicate effectively
- Establish shared values focused on integrity, competence and service
- Make Integrated Safety Management and Conduct of Operations a priority
- Establish a “just culture”

Employee/worker engagement

- Reduce management layers to put leadership closer to work and simplify interfaces
- Involve workers directly in process improvement efforts
- Develop and deploy improved management processes and procedures
- Streamline training and qualification and evaluate effectiveness
- Foster staff development of critical thinking skills for risk assessment

Organizational learning

- Mentor key first-line supervisors
- Coach on proper planning, hazard identification, and work control
- Get all managers out in the field
- Leverage communities of practice and peer review processes
- Incorporate diagnostic tools to assess culture change program